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Source: *The Monist*, Vol. 41, No. 4 (October, 1931), pp. 618-623

Published by: [Hegeler Institute](#)

Stable URL: <http://www.jstor.org/stable/27901327>

Accessed: 02/01/2015 19:11

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PHYSICALISM:

The Philosophy of the Viennese Circle

ALTHOUGH what is called “philosophical speculation” is undoubtedly on the decline many of the practically minded have not yet freed themselves from a method of reasoning which, in the last analysis, has its roots in theology and metaphysics. No science which pretends to be exact can accept an untested theory or doctrine; yet even in an exact science there is often an admixture of magic, theology, and philosophy. It is one of the tasks of our time to aid scientific reasoning to attain its goal without hindrance. Whoever undertakes this is concerned not so much with “philosophy,” properly speaking, as with “anti-philosophy.” For him there is but one science with subdivisions—a unified science of sciences. We have a science that deals with rocks, another that deals with plants, a third that deals with animals, but we need a science that unites them all.

All these disciplines are constructed of the same bricks, as it were. Our knowledge of phenomena is controlled by sight, hearing, tasting—our sense organs. In any such consistent empiricism psychology must concern itself with human behavior, just as mineralogy (together with chemistry, physics, etc.) is concerned with the “behavior” of stones.

The followers of this method of reasoning invariably

ask: What do I mean by a positive statement, and how can I test it? A statement which cannot be controlled is a *thesis devoid of sense*. Those who thus succeed in formulating a system of laws which they apply in *predicting events* were best regarded as “*representatives of a scientific conception of the universe*” (*wissenschaftliche Welt-auffassung*). Mach, Poincaré, Peano and others, as followers of Hume, in a certain sense, have done their best to sweep away the last vestiges of theology and metaphysics. Their work is now being continued by many of the younger intellects, especially in Europe, intellects busily engaged in *analyzing the language of science* and the system of signs and building up a *system of symbols* with the aid of logic and mathematics. Bertrand Russell’s work has been of decisive value in this effort.

All these adherents of a rigorous empiricism reject anything that smacks of the “absolute,” whether the subject matter relates to the world of the *a priori*, or the world of the categorical imperative. “School philosophy,” with its definite conception of the fundamental basis of being or thinking, presumes to sit in judgment on science as if it were a court of last resort, and this presumption the representatives of a scientific *Weltauffassung* summarily reject. They know only science and the clarification of scientific methods, and this clarification is all that remains of old-fashioned “philosophizing.” Philosophy as an independent system of definite doctrines is obsolete. What can not be regarded as unified science must be accepted as poetry or fiction.

This point of view is advanced with especial energy by the “Viennese Circle” which is strongly influenced by Bertrand Russell and by Wittgenstein whose *Tractatus* was edited in German and English by Russell. On be-

half of this group Moritz Schlick and Philip Frank are issuing a series of publications which are designed to aid the cause of a scientific conception of the universe in all departments of science.¹ A periodical with the same program, *Erkenntnis*, is edited by Rudolf Carnap (Vienna) and Hans Reichenbach (Berlin).²

The system of laws from which single events or processes are deduced, in other words unified science, can be wholly or partially modified whenever the results obtained are contradicted by experience or observation. Every phenomenon is tested by means of sound, light, etc., but sound and light play no part in the final scientific presentation. In the formulas of science, with the aid of which human beings succeed in understanding one another, only logical-mathematical signs are utilized. It is senseless to say: "I see the same red as my friend." How my friend combines the symbol "red" with other signs clarifies for me the structure of his system of expression. More cannot be done by science. Signs can indicate a "near," a "between" and a "so much," but no more. What is at all scientifically expressible is no richer in fundamental relations than the symbols on a Morse tape which the telegrapher reads as they are sounded by his apparatus. In a sense unified science is physics in its largest aspect, a tissue of laws expressing space-time linkages—let us call it: *Physicalism*.

Physics has been successfully purged of metaphysical

¹Published by Julius Springer, Wien.

Bd. 1. Friedrich Waismann: *Sprache, Philosophie*.

Bd. 2. Rudolf Carnap: *Abriss der Logistik*.

Bd. 3. Richard von Mises: *Wahrscheinlichkeit, Statistik und Wahrheit*.

Bd. 4. Otto Neurath: *Empirische Soziologie*.

Bd. 5. Philipp Frank: *Die Kausalität und ihre Grenzen*.

Bd. 6. Moritz Schlick: *Fragen der Ethik*.

²Published by Felix Meiner, Leipzig. The *Erkenntnis* is the organ of the *Verein Ernst Mach* in Vienna and of the *Gesellschaft fuer empirische Philosophie* in Berlin.

formulas. For example, the conception of "absolute motion" has been discarded, a conception which acquired meaning only if one thought of "absolute space" as a gigantic glass case in which "coordinates" were woven like spider webs so that it became possible to determine whether a body is at absolute rest or whether it is moving about within the case. The Mach-Einstein conception dispenses with this "absolute space" which assumes any meaning only when one conceives of God who is present in all places at all times. Absolute space is a product, in a sense, of a "sensorium of God" (Newton). In the Mach-Einstein theory we find only bodies and their relationships. A body can move only in relation to other bodies and not in relation to "space." It is impossible to draw conclusions which are simultaneously and universally applicable. We can do no more than record the "biographies" of individual bodies and note how these bodies approach and recede from other bodies. The sum of these biographies constitutes a scientific description which does no more than formulate statements for observational verification.

In the field of psychology, the physicalists are closely allied with Watson and his behaviorists without, however, accepting their formulas. In the field of biology, the physicalists reject "vitalism" insofar as it maintains that unspatial-time entities become "effective." In sociology, also, the physicalists find it necessary to oppose transcendental, metaphysical entities, the "spirit of an age" which "manifests" itself in various ways, and "the powers of the spirit" which are in perpetual conflict with one another. It is in this very field that metaphysical tendencies (as in Sombart, for example) constantly crop out, although "history" and "economics" now include empirical sociology, deal with such concrete things as human beings, streets, cities, ve-

hicles, factories and the like. In Germany it is the fashion to oppose *Geisteswissenschaften*, the "intellectual or moral sciences," to the others, to separate cultural science sharply from natural science and to demand special methods for each of the two fields. In Physicalism no such separation is tenable which in the last analysis can be traced back to the unwillingness of man to give up entirely his special position as part of a celestial kingdom.

Ethics, which dealt formerly either with the laws of a God or at least with laws "*an sich*," in other words, laws from which in a certain sense God had been eliminated (Kant's categorical imperative), is now supplanted by inquiries which make it possible for man to attain happiness by definite arrangements or definite methods of conduct (behavior). Instead of the priest we find the physiological physician and the sociological organizer. Definite conditions are tested for their effect upon happiness (*Glueckswirkungen*), just as a machine is tested to measure its lifting effect. No science can teach what "should" be done; it can assert only that because A and B have happened, a very definite C follows. The task demands systematic organization of human effort. This involves engineering, gymnastics (hygiene), and the social technology of today, all of which have an influence on scientific management and commercial organization and thus on human life as a whole.

Everywhere we find a growing sense of technical organization, a sense in harmony with the extension of that new scientific conception of the universe (*Weltauffassung*) which forges a powerful weapon by the unification of science.

No matter in what country or continent they may be, those who regard themselves as simple laborers in solving

the riddle of life unconsciously join forces whenever they devote time and effort to the clarification of science and whenever they systematize and interpret with the aid of logic and mathematics all that we perceive through the senses. To predict what will happen and to guide one's actions accordingly is the greatest triumph of earthly striving, the concrete success of human effort which does not make use of *theses devoid of sense* but is rooted in the soil of Psysicalism.

OTTO NEURATH.

VIENNA, AUSTRIA.